Claim Rejections – 35 U.S.C. § 112

Claims 5 and 8 were rejected as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. These claims were amended in accordance with the Examiner's request, rendering this rejection moot.

Claim Rejections – 35 U.S.C. § 102

The Examiner rejected Claims 1 and 3-9 under 35 U.S.C. § 102(b) for anticipation by EP 590604, incorporating the previous argument by reference. The Examiner also provided a detailed response to the arguments presented by the Applicant's previous reply.

In the Examiner's "Response to Arguments," section 10, the Examiner states that "the reference does disclose the claimed invention with sufficient specificity. According to MPEP 2131.03, the 'test' for lack of sufficient specificity arises when the reference range is relatively broad with respect to the claimed range. That, however, is not the case here as evidenced from the overlap in the ranges shown in the diagram below wherein the top line indicates the reference range and the bottom line the claimed range." The Examiner then inserts three sets of lines representing Tg, Avg. particle diameter and Particle size distribution.

Applicant respectfully disagrees with the Examiner's showing of "sufficient specificity," for the reasons detailed below.

1. The Examiner's drawings are not to scale, particularly since a 40 degree change in temperature for the reference range and a 45 degree change in temperature for the claimed range are viewed as vastly different size lines.
2. More of the Tg range fails to overlap than actually does overlap. The Tg overlap between the reference range and the claimed range is only 15 degrees Celsius, while the lack of an overlap is 30 degrees above the lower limit of the claimed range and 25 degrees above the higher limit of the claimed range. Therefore, over a total span of 70 degrees Celsius, only 15 degrees overlap.
3. Out of a possible 900 nm range of average particle diameter, there is only a 150 nm overlap. The required range of the claimed invention is over 83% narrower in average particle diameter than the reference range.

4. The reference, EP 590604, does not recite a required absolute minimum and maximum particle size range as implied by the Examiner's drawing. Instead, EP 590604 discloses a copolymer with at least 95% of the copolymer having an average particle size of 100-1000 nm, preferably 100-500 nm. One skilled in the art would expect the average particle size range to be less than the absolute minimum/maximum particle size range. This means that the expected overlap of the absolute minimum and maximum particle size range is less than what is depicted in the drawing, if any minimum/maximum particle size is even contemplated by the reference.

Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, *arranged as in the claim*. *Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 221 USPQ 481, 485 (Fed. Cir. 1984) (emphasis added). There must be no difference between the claimed invention and the reference disclosure, as viewed by a person of ordinary skill in the field of the invention. *Scripps Clinic & Research Foundation v. Genentech Inc.*, 18 USPQ 2d 1001, 1010 (Fed. Cir. 1991). EP 590604 fails to disclose any absolute minimum and maximum particle size, let alone the criticality of having an absolute minimum and maximum particle size in the range of 150 – 400 nm.

Claim Rejections – 35 U.S.C. § 103(a)

The Examiner rejected Claims 1 and 3-9 under 35 U.S.C. § 103(a) for obviousness over EP 867484 in view of US 5959024 (Farwaha et al.). The Examiner states that "the difference between EP 867484 and the present invention is the requirement in the claims of particle size distribution of the polymer" and combines Farwaha et al. to cure this deficiency. The Examiner states that Farwaha et al., "is used as a teaching reference for the concept that narrow particle size distributions have better gloss, and in combination with the primary reference, discloses the presently claimed invention." The Examiner states that "in light of the motivation for using an acrylic polymer with narrow particle size distribution disclosed by Farwaha et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use polymer with narrow particle size distribution including that presently claimed, in EP 867484 in order to produce a composition with improved gloss and water resistance, and thereby arrive at the claimed invention." Applicant respectfully disagrees.

Determination of obviousness cannot be based on the hindsight combination of components selectively culled from the prior art to fit the parameters of the patented invention. There must be a teaching or suggestion within the prior art, or within the general knowledge of a person of ordinary skill in the field of the invention, to look to particular sources of information, to select particular elements, and to combine them in the way they were combined by the inventor. *ATD Corporation v. Lydall, Inc.*, 48 USPQ 2d 1321, 1329 (Fed. Cir. 1998). In ascertaining the differences between the prior art and the claims at issue it is essential to view the claims at issue as "the invention as a whole." In so doing, it is legally improper to focus on the obviousness of substitutions and differences between the claimed invention and the prior art rather than on the obviousness of the claimed invention *as a whole* relative to that prior art. *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1383, 231 USPQ 81, 93 (Fed. Cir. 1986), cert. Den., 480 US 947 (1987).

There is no suggestion, teaching or motivation for one skilled in the art to combine the references in the manner combined by the Examiner and moreover, the above references, alone or in combination, fail to disclose the Applicant's claimed invention. The art cited fails to provide such motivation. Gloss is not an attribute sought after by Applicant's invention – wet-rub and highlighter resistance are properties referred to in Applicant's description of improved ink properties provided by such binders. Moreover, out of all of the art describing attributes of acrylic polymers based on particle size aspects, there is nothing special about Farwaha that makes it stand out as needing to be combined with ink references, unless hindsight analysis is involved. That is, once the target particle size is identified, then it is easy to see why Farwaha has significance.

Although Farwaha et al. is used only as a "teaching reference" by the Examiner, in combination with other art, its relevance with inks is important in establishing whether there is any motivation to combine the references combined by the Examiner. Farwaha et al., as a whole, is "directed to the use of nonpolymerizable, hydrophobically-modified saccharides as emulsion stabilizers during the synthesis of acrylic latexes, and coating compositions prepared with acrylic latexes which have been prepared using the saccharide stabilizers. (Abstract)." Farwaha et al. fails to provide any information related to binders for inks and fails to describe properties attributable to inks. One skilled in the art would not look to a patent about saccharide stabilizers

to find one or two lines about improving gloss with narrow particle size distributions and saccharide stabilizers in order to achieve superior ink binding properties, highlighter resistance and reduced clogging for printer heads or in order to combine it with an ink reference.

Moreover, the Examiner failed to address Applicant's argument about absolute minimum and maximum particle size ranges. Farwaha et al. fails to disclose any specific range or any benefits associated with any specific range, even as related to coatings and saccharide stabilizers, let alone inks. Farwaha et al. merely discloses that being less than 500 nm in average particle size for coatings using saccharide stabilizers to form the coatings will generally provide a more water resistant polymer. There is no teaching, suggestion or motivation in any of the references cited about the need for a specific particle size range claimed by Applicant.

The Examiner rejected Claims 1 and 3-9 under 35 U.S.C. § 103(a) for obviousness over US 5622778 (Horii et al.) in view of US 5959024 (Farwaha et al.). The Examiner states that "the difference between Horii et al. and the present claimed invention is the requirement in the claims of particle size distribution of the polymer" and combines Farwaha et al. to cure this deficiency. Applicant respectfully disagrees.

The arguments presented above regarding an improper hindsight analysis, the lack of motivation to combine the art and the lack of support for any particular absolute minimum and maximum particle size range are equally applicable to this rejection. The Examiner has focused on Applicant's preamble as not being claim limitations. However, Applicant's arguments are based on a lack of motivation for combining the art and an improper hindsight analysis. Moreover, even when combined, the art still fails to recite any particular absolute minimum and maximum particle size range as required by Applicant's invention.

Applicant maintains that such claims are patentable in view of the arguments presented above. A Notice of Appeal is enclosed with this response to allow the filing of an appeal brief within two months. Applicant's attorney thanks the Examiner for the time taken to review this response. In view of the foregoing remarks and claim changes, Applicant respectfully requests

reconsideration of the rejections and allowance of the claims. The Examiner is encouraged to contact the attorney listed below if there are any questions or comments.

Respectfully submitted,

Karl Stauss
Attorney for Applicant
Registration No. 40,827
Telephone (215) 592-3436

Rohm and Haas Company
100 Independence Mall West
Philadelphia, PA 19106-2399

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In The Claims

Please amend the claims as shown below.

5. (Amended) A polymer emulsion useful as a binder in inkjet inks comprising

(a) one or more monomers selected from the group consisting of acrylates, methacrylates, styrene, substituted stryene, fluoromethacrylates, vinyl acrylates, vinyl acetates, acrylamides, substituted acrylamides, methacrylamides, and substituted methacrylamides, and

(b) an acid component selected from the group consisting of acrylic acid, methacrylic acid, itaconic acid, maleic acids, vinylsulfonic acid, and acid derived from methacrylic anhydride, maleic anhydride, sodium vinylsulfonate, ~~and~~ acrylamidopropane sulfonate, ~~or~~ and combinations thereof, wherein the acid component is present in a range from 1 to 10 wt.% of the polymer;

wherein the polymer has a glass transition temperature in the range from -20°C to 25°C, and an average particle diameter in the range from 250 to 400 nm, and a particle size distribution such that essentially all the particles have a diameter in the range from 130 to 450 nm.

8. (Twice Amended) An ink binder comprising a polymer consisting essentially of:

(a) one or more monomers selected from the group consisting of acrylates, methacrylates, styrene, substituted stryene, fluoromethacrylates, vinyl acrylates, vinyl acetates, acrylamides, substituted acrylamides, methacrylamides, and substituted methacrylamides, and

(b) an acid component selected from the group consisting of acrylic acid, methacrylic acid, itaconic acid, maleic acids, vinylsulfonic acid, and acid derived from methacrylic anhydride, maleic anhydride, sodium vinylsulfonate, acrylamidopropane sulfonate, and combinations thereof, wherein the acid component is present in a range from 1 to 3 wt.% of the polymer;

wherein the polymer has a glass transition temperature in the range from -20°C to 25°C, a particle size distribution such that essentially all the particles have a diameter in the range from 130 to 450 nm and an average particle diameter in the range from 250 to 400 nm.